

Instruction manual & spare parts list



Unitor Welding Inverter UWW-161 TP Multi Process MIG-MAG-MMA-TIG TP (total protection) version, from serial number 111194

DECLARATION OF CONFORMITY



We hereby state that the machine type UWW-161TP
TP (Total Protection)
version
s.n.: 111194 and higher

is in compliance with the directives 2004/108/CE
2006/95/CE

and that the following standards apply EN 60974-1
EN 60974-5
EN 60974-10

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Belvedere, Maggio 2004

Amm. Giorgio TONIOLO

UWW-161TP s.n.: 111194 and higher is also in compliance with the
RoHS directive 2002/95 CE

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DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING
THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT

1. GENERAL DESCRIPTION

UWW-161 TP is a compact and portable Single Phase Inverter Power Source for professional MIG-MAG, TIG and MMA welding.

It connects to a standard 230V one phase socket, preferably with slow fuses to allow full power. The TP (total protection) version is protected against too high input voltage and will close down completely to prevent damage if input voltage exceeds 285V. A led on the rear panel will be lit to indicate that the protection is on. When the input voltage is reduced welding power will automatically be restored.

The automatic Voltage Reducing Function provides operator safety by reducing “touchable” voltage for the operator to max. 10V between electrode holder and work-piece.

The automatic Amperage Draw Protection will cut the current to prevent damage to the machine, and sound an alarm tone to warn the operator if welding with the set wire welding parameters exceeds the capacity of the unit.

UWW-161 TP is easy to transport, only 12kg weight and it is specifically designed for light fabrication, maintenance and repair work on board.

It offers excellent MIG-brazing characteristics using CuSi3 and CuSi6 type wires.

Polarity change for Euro-connector allows welding with self shielded wires.

User-friendly control panel allows precise parameters settings using only two knobs.

Selection between a softer and crisper arc allows optimal arc for various wires.

Built-in wind tunnel cooling protects electronic devices from dust and saltiness, improving the UWI-161 MP arc welder's life cycle.

- Light weight and reliable
- Up to 3,25mm electrodes in MMA
- Lift arc TIG DC ignition reduces Tungsten inclusions without generating the radio interference that High frequency arc start may cause.
- Excellent MIG/MAG welding properties.
- Polarity selection for self-shielded wire welding.



2 IDENTIFY COMPONENTS

UWW-161 TP complete, product number 193-161161 is delivered with

1	Primary cable, 2.5m with plug (fitted on machine)	1 piece
2	Gas hose socket with nut and hose clamp Product number 161165	1 set
3	Drive roll V groove, 0.6-0.8mm (fitted in machine) Product number 160003	1 piece
4	Outgoing wire guide tube for mounting in the wire drive unit	1 piece
5	MIG/MAG torch M-161 with 3m cable and euroconnector Product number 161163	1 piece
6	Steel liner (fitted in torch cable) Product number 613746	1 piece
7	Contact tip 0.8mm, (fitted in torch) Product number 711994	1 piece
8	Return clamp with 3m cable and connector Product number 633164	1 set
9	Electrode holder with 3m cable and connector Product number 627877	1 set
10	Carrying strap for mounting on the machine	1 piece
11	Instruction Manual	1 piece



3 TECHNICAL DATA

UNITOR

Wilhelmsen Ships Service AS

Strandveien 20 - P O Box 33

N-1324 Lysaker

Norway

Model: UWW 161 TP

S.n:

EN 60974-1/-5

EN 60974-10 Class A

	U ₀ 10V	5A/20.0V		140A/25.6V	
		X	35%	60%	100%
	---	I ₂	140A	120A	100A
		U ₂	25.6V	24.8V	24.0V
	U ₀ 10V	5A/10.0V		140A/15.6V	
		X	40%	60%	100%
	---	I ₂	140A	130A	110A
		U ₂	15.6V	15.2V	14.4V
	U ₀ 10V	5A/14.2V		160A/22.0V	
		X	30%	60%	100%
	---	I ₂	160A	120A	100A
		U ₂	22.0	20.0V	19.0V
	1~50/60Hz	U ₁ 230V		I _{1max}	23.5A
				I _{1eff}	16.0A
IP 23S	I.CL.H.			I _{1max}	15.7A
				I _{1eff}	11.3A
COOLING AF				I _{1max}	24.0A
				I _{1eff}	13.1A

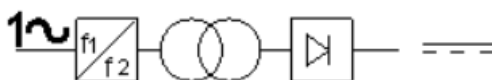
⚠ WARNING

FOR CONTINUED PROTECTION AGAINST HAZARD
REPLACE ONLY WITH A 800mA 250V DELAYED FUSE
DISCONNECT POWER CORD BEFORE REPLACING FUSE

Caution! Read operator's manual!

The unique serial number for the machine will be printed here. Always give serial number when ordering spares or in other communication with WSS concerning your machine.

Type of welding machine



One-phase static transformer rectifier frequency converter, DC output.

Processes



MMA (Stick electrode / SMAW)



TIG (GTAW)



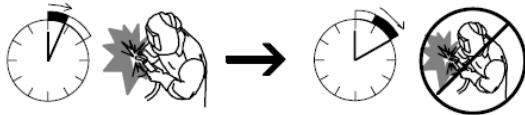
MIG/MAG (Metal Inert Gas/Metal Active Gas)
GMAW (Gas Metal Arc Welding)
FCAW (Flux Cored Arc Welding)

Safety Marking



Suitable for use in areas with increased electric shock hazard

X: Duty cycle



Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating. It refers to a 40°C environmental temperature. If unit overheats a thermal switch stops the output, the warning light for over-temperature is lit and the cooling fan continues to run. Wait fifteen minutes for unit to cool. Reduce amperage or duty cycle before starting to weld.

I₂= Welding current.

Range 5 – 140 / 160A

U₀ = No-load voltage

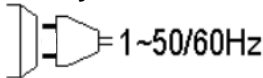
Also called open circuit voltage, is the voltage (excluded any stabilization voltage or arc ignition) found between the output outlets when the welding machine is not welding. This is the voltage a welder can be exposed to between electrode holder and work piece.

U₂ = Arc voltage

Voltage present between the output outlets when welding is being carried out, in relation to a particular set current. The relation, for the various welding modes is the following:

MMA→U₂=20+0,04*I₂, TIG →U₂=10+0,04*I₂, MIG/MAG→U₂=14+0,05*I₂

Primary connection



U₁ = Effective input voltage 230V

I_{1max} = Maximum value of input current at the corresponding duty cycle.

I_{1eff} = Effective value of input current at the corresponding duty cycle.

Cooling

COOLING AF= Forced air cooling (with a fan).

Protection class

IP23S= Ingress Protection class. Protection degree of the casing according to EN 60529

2: Protection against object not greater than 80mm in length and 12mm in diameter

3: Protection from sprayed water at an angle of 60° from vertical

S: Valid when switched off. If welding in heavy rain the cooling air can drag in moisture.

Thermal insulation class

I.CL.H= Thermal class of the insulating materials and insulation systems resistant up to 180°C.

Standards

EN 60974-10 European Norm for electromagnetic compatibility.

EN 60974-1/5 European Norm for arc welding appliance: Current sources for welding.



Mark stating conformity to all safety standards and other standards required for sale within the European Union

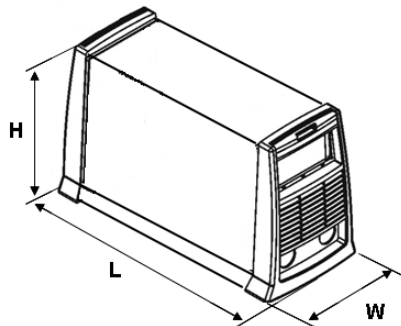
Dimensions and weight

Height : 325mm

Length : 460mm

Width : 230mm

Weight : 12,2kg



4 INSTALLATION

Only qualified personnel should perform this installation.

Only personnel that have read and understood this Manual should install and operate this equipment.
The machine must only be plugged into a receptacle which is grounded per applicable electrical codes.

Note 1

The power switch is to be in the OFF position when installing work cable and torch and when connecting power cord to input power.

Note 2

The parts behind the wire drive door are live when wire welding. **Never** open or leave this door open while welding

SELECT SUITABLE LOCATION

The UWW-161TP has an IP23S rating. Locate the welder in a dry location where there is free circulation of clean air into the back and out the front of the unit.

Ensure minimum 50cm free space from the back of the machine. If free flow of air is hindered the machine will overheat.

A location that minimizes the amount of smoke and dirt drawn into the machine reduces the chance of dirt accumulation that can block air passages and cause overheating.

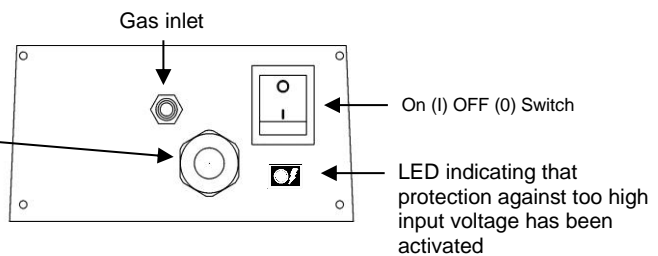
AVOID TILTING

The machine must be placed on a secure, level surface, maximum 10° out of horizontal.

ASSEMBLY

To the back panel

- 1 Primary connection 230V 50/60Hz 1phase + protective earth. 2,5m cable 3x2,5mm² with plug is included
- 2 Gas Cylinder with Argon, Argon/CO₂ or CO₂ (not included with machine)
- 3 Gas regulator with flow adjustment (not included with machine)
- 4 Gas hose (not included with the machine)
- 5 Hose socket with nut and hose clamp for 6mm (1/4") hose, included with the machine



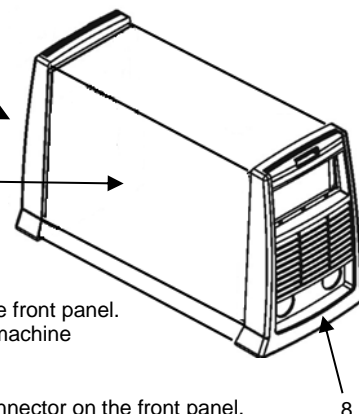
Important!
To prevent overheating the machine requires at least 0,5 m free distance at the back to allow free flow of cooling air. →

Inside the machine

6. Spool of welding wire (not included with the machine)
7. Wire feed roll V-groove for 0,6-0,8mm wire

To the front panel

- 8.a MIG torch (included with the machine) to the Euro-connection
 - then select polarity to the Euro-connection with the cable and Dix-connector on the front panel.
 - then connect the return cable to the other polarity. MIG torch is included with the machine
- 8.b TIG torch (not included with the machine) to the Euro-connection
 - then select – (negative) polarity to the Euro-connection with the cable and Dix-connector on the front panel.
 - then connect the return cable to the + (positive) polarity
- 8.c Electrode holder (included with the machine) for MMA welding to the + or – socket depending on the type of electrode to be used
- 8.d Return clamp (included with the machine) for all processes to the free (+ or -) socket.

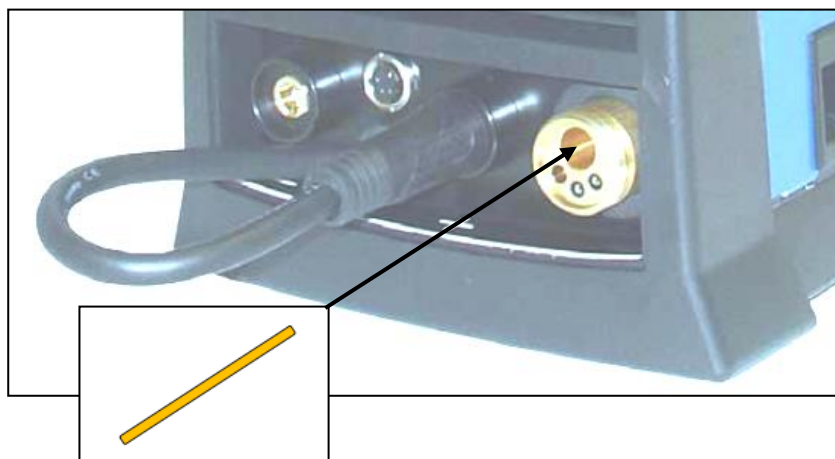


POLARITY SELECTION

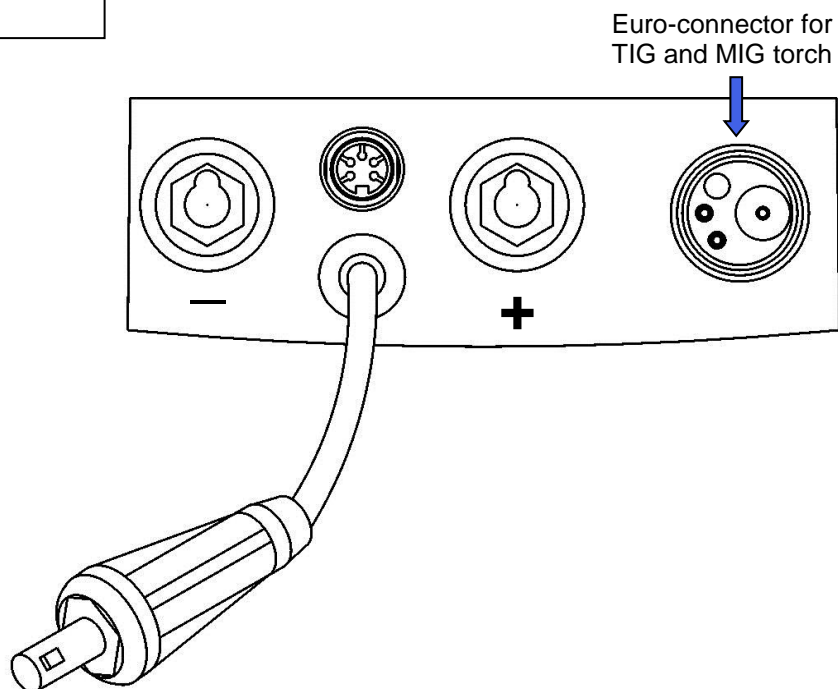
In the picture below the cable supplying current to the Euro-connector is connected to the machine plus-connection. The cable to return current (ground clamp) then has to be connected to the machine minus-connection to the right in the picture. This means the machine is set for welding with **electrode plus polarity** from the Euro-connector to the right, which is the normal setting for MIG/MAG welding.

For Self-shielded wires (without shielding gas) and for TIG welding the minus polarity should normally be selected, and the return clamp should be connected to the plus polarity.

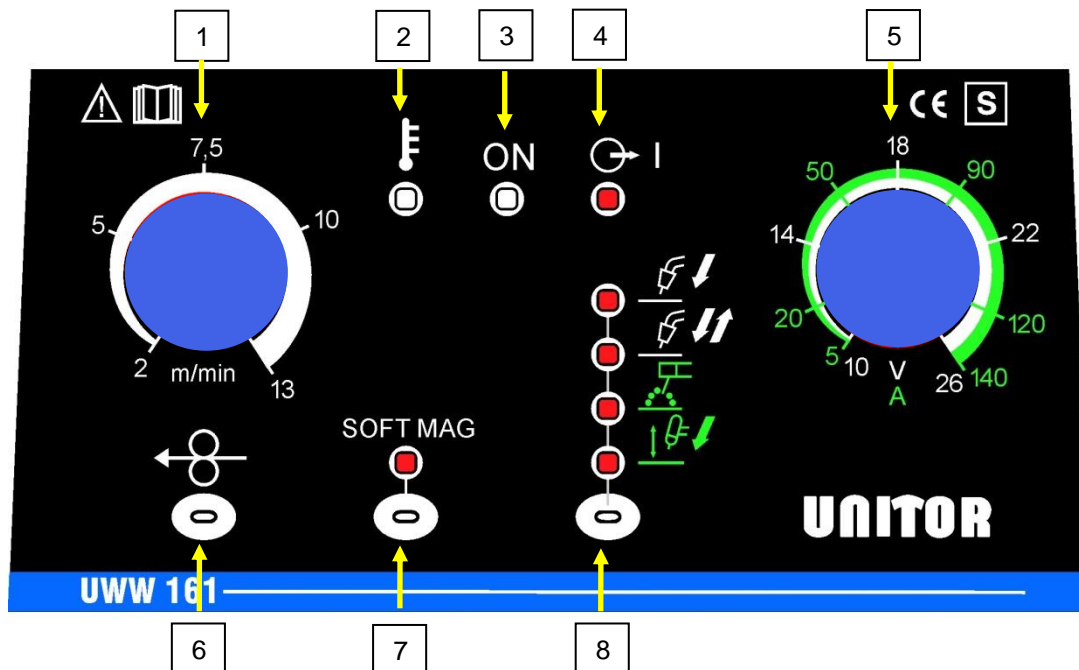
For stick electrode welding (MMA) the cable in the picture is disconnected as shown in the drawing, and electrode cable and return cable are connected to plus and minus according to the requirements of the electrode that is going to be used.



The outgoing wire guide tube is inserted here, slightly bent to prevent it from falling out when the MIG torch Euro-connector is disconnected.



5 FRONT PANEL

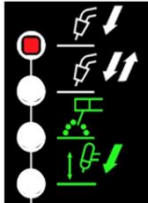


1. Wire speed adjustment. See separate table under OPERATION for relation between wire speed and approximate welding current. This adjustment is only active when one of the wire welding modes are selected
2. When this LED is lit, it means that the thermal cut-out for overheating of the machine has triggered and there is no welding current. Do not switch the machine off. The fan will be running and the thermostat resets automatically when the machine has cooled down sufficiently. The light will darken when the machine is live again.

When the machine is switched on, this LED is lit for five seconds, during which time there is no welding current available.
3. Power on. When this LED is on welding current is available. In MMA (stick electrode) welding mode the open circuit voltage of 10V is present between + and – terminals.
4. Warning light indicating live terminals
5. Welding current / voltage adjustment. The green scale A 5-140 show selected amperage for MMA (stick electrode) welding. The white scale V 10-26 show selected voltage for MIG (wire) welding
6. Wire feed function. By pressing this knob wire will be fed through to the torch without being electrically live.

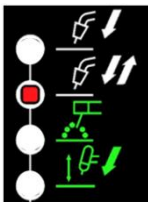
7. This knob is active in the MIG/MAG mode only and allows selection between two arc types. When the led above the knob is lit a softer welding arc for MIG brazing is obtained. When the led is dark the normal, slightly crisper or harder arc is obtained.

8. Mode selection



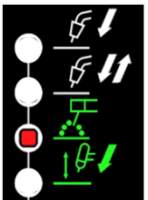
2 step wire welding

- Bring the torch close to the piece you mean to weld.
- Press (step 1) and hold the torch button.
- The wire advances at closing speed until it contacts with the work-piece. The welding arc is lit and the set wire feed speed will continue at set speed.
- Release the button (step 2) in order to start the welding completion procedure.
- The supply of gas continue for the selected post-gas time



4 step wire welding

- Bring the torch close to the piece you mean to weld.
- Press (step 1) and release (step 2) the torch button.
- The wire advances at closing speed until it contacts with the work-piece. The welding arc is lit and the set wire feed speed will continue at set speed.
- Press (step 3) and release (step 3) the button in order to start the welding completion procedure.
- The supply of gas continue for the selected post-gas time

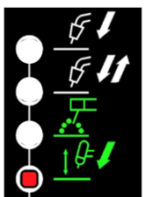


MMA (stick) welding

In this mode a constant current characteristic for MMA welding is set and the terminals are live (10V).

An automatic hot-start enables easy arc start. And an automatic arc-force maintains a smooth and stable arc by momentarily increasing the current if bigger droplets in the arc tends to produce short circuits.

An automatic anti-stick function will cut the power if the electrode should get stuck in the melt-pool so that it can be removed without damage.



2 step TIG welding

- Touch the electrode to the piece you mean to weld.
- Press (step 1) and hold the torch button. Shielding gas and very small "signal" current will start flowing.
- Lift the torch slowly, and the signal current will initialize an arc and an up-slope function that increases the current to set value.
- Release the button (step 2) in order to start the slope-down function that gradually reduces the welding current to zero.

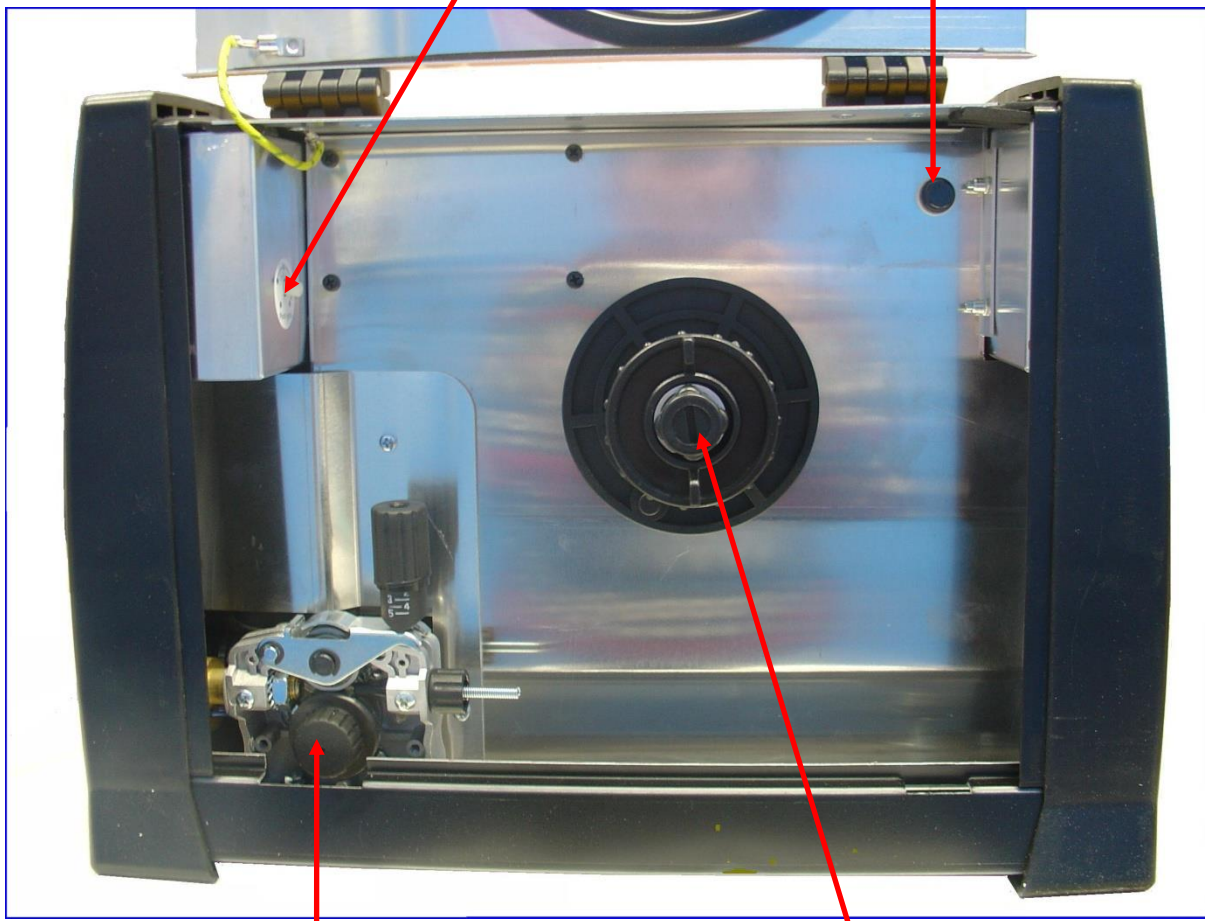
NOTE: The arc must be started within 3 seconds, if not the signal current will be stopped to protect the circuit and a new start cannot be done before gas supply has stopped.

The supply of gas will continue for the selected post-gas time

6 SPOOL COMPARTMENT

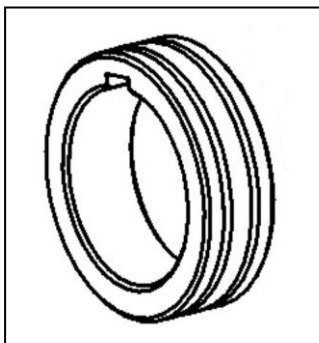
Gas post-flows pot-meter the gas post-flow for MIG and TIG can be adjusted from 0-3 seconds. It must be long enough to ensure sufficient cooling of the weld pool to avoid oxidation.

Fuse for the auxiliary transformer providing current to the wire feed motor: 800mA 250V slow fuse.



Wire feed system with drive rolls and pressure adjustment.

Shaft for spool attachment and Friction Brake Adjustment



The drive rolls have two grooves for two different wire sizes

V-groove 0,6-0,8mm for solid wires except aluminium



GPS W 200
IALBRO W 237
ICUNI W 239

Knurled V-groove 1,0 (0,8) - 1,2mm for flux-cored wires



MS W 201
S 316 M-GF 221
S 309 M-GF 222

U-groove 0,8-1,0mm for aluminium wires



ALUMAG W 235

7 WIRE LOADING

Release the spring loaded pressure arm (1) rotate the roll arm (2) up from the wire feed drive roll (3).

Ensure that the groove size in the feeding position on the drive roll matches the wire type and size.

Place the wire spool in place on the wire spool spindle (4). Make sure that the stud (5) engages in the corresponding hole in the wire spool.

Check the Friction Brake Adjustment, a bolt inside the spindle (6). When properly adjusted, the brake should provide only enough drag to prevent overrun of the spool and excess slack in the wire. Too much drag may result in wire feeding problems,

Replace the cap (7).

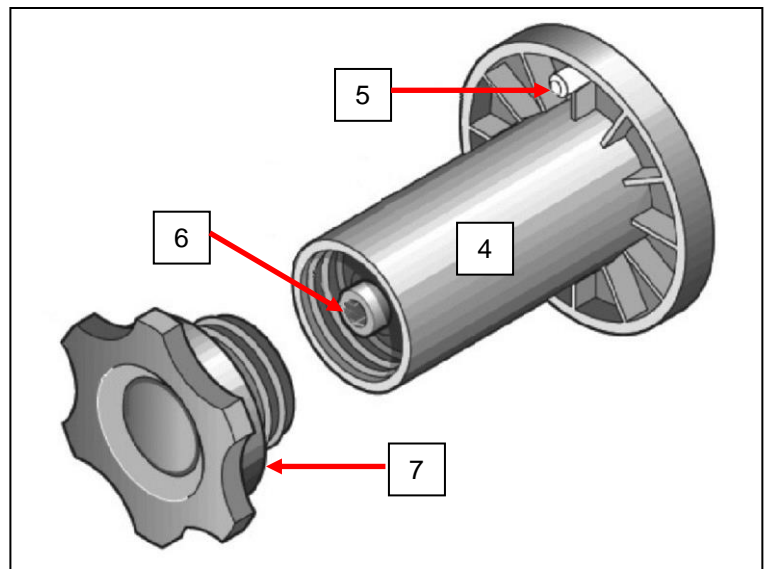
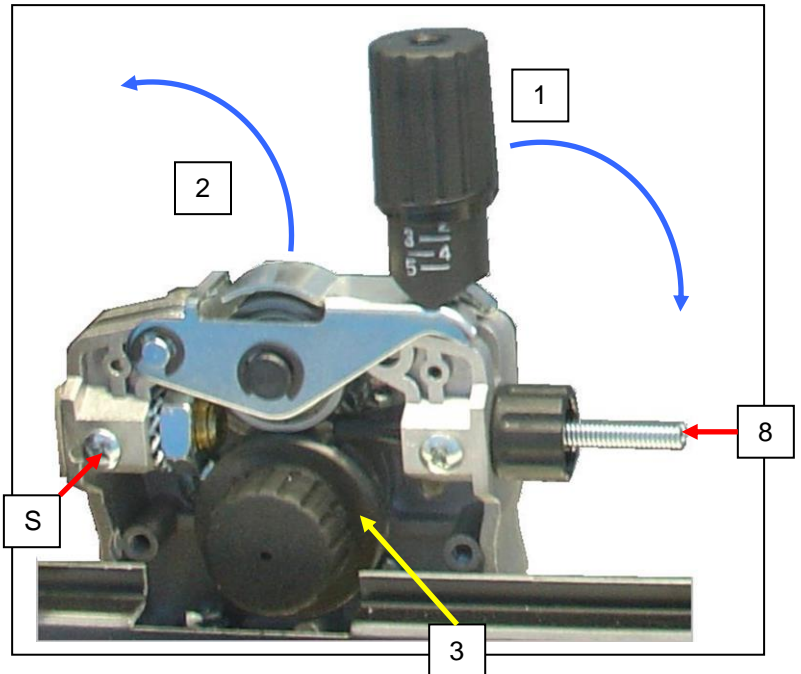
Carefully detach the end of the wire from the spool, cut the bent portion of wire off and straighten the first 10cm.

Thread the wire through the ingoing guide tube (8), over the drive roll (3), and into the outgoing guide tube.

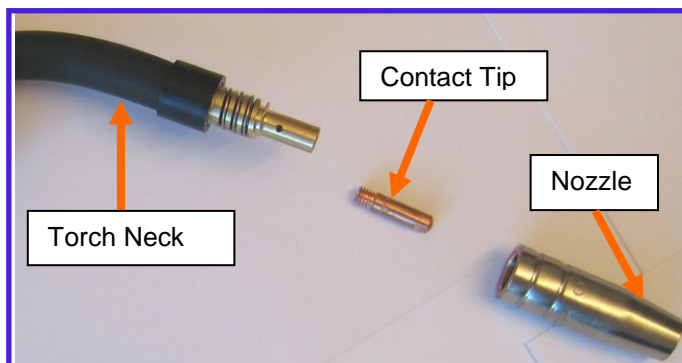
Close the idle roll arm (2) and latch the spring loaded pressure arm (1) in place.

The roll pressure on the wire is adjusted with the screw on the pressure arm. nut above the spring. It should be sufficient to ensure smooth feeding of the wire.

Rotate the spool counterclockwise if required to take up extra slack in the wire.



8 OPERATING INSTRUCTIONS



1. Welding wire has been selected
2. Correct polarity to the torch / welding wire has been selected
3. Wire spool has been inserted, spool brake has been checked, wire inserted in the central connector, and the idle roll arm has been closed.
4. Torch has been connected to the front of the machine
5. Return clamp has been properly connected to the work piece
6. Correct shielding gas (if required) has been connected to the gas inlet at the back of the machine and to a gas cylinder with gas flow regulator, and the cylinder valve has been opened.
7. The wire compartment is closed and the machine switched on.

Next steps

8. Set the lowest wire feed speed, press the torch trigger. The gas solenoid valve will now open and allow to adjust correct gas flow on the flow regulator.
9. Pull off the nozzle from the torch, unscrew the contact tip and straighten the gun cable assembly
10. Press wire feed knob (6) on the front panel to feed the wire out through the torch neck.
11. Replace the contact tip and nozzle.
12. Set wire speed and voltage in accordance with the wire specifications and proceed with the welding.
13. When finished, close the gas cylinder and press the trigger shortly to vent off gas pressure in hoses and machine before switching off and unplugging.

Examples on parameter settings

Unitor Wire	Wire size mm	Groove type	Wire speed m/min	Volt and polarity	Shielding gas	Gas flow
GPS W 200	0,8	V	7,5	22V +	Ar/CO ₂	10-15 l/min
MS W 201	0,8	V-serrated	12	20V -	No gas	
S 316 M-GF 221	0.9	V-serrated	11	22V +	Ar/CO ₂	22-25 l/min
S 309 M-GF 222	0.9	V-serrated	13	24V +	Ar/CO ₂	22-25 l/min
Icuni W 239	0,8	V	7,5	22V +	Ar	15-20 l/min
Ialbro W 237	0,8	V	7,5	22V +	Ar	15-20 l/min
Alumag W 235	1,0	U	12	23V +	Ar	15-20 l/min
Alumag W 235	1,0	U	7,5	22V +	Ar	15-20 l/min
CuSi3Mn*	1,0	V	7,5	22V +	Ar	15-20 l/min
CuSi3Mn*	1,0	V	5,5	18V +	Ar	15-20 l/min

*MIG brazing wire on request. Activate "soft arc" on the front panel for brazing

9 WIRE WELDING CONSUMABLE SPARES

Product number	Product Description	Wire size mm mm	Application area					
			Cored wires steel	Solid wires steel	Cored wire stainless	Solid wire stainless	Solid wire non-iron	Aluminum wire
WIRE FEED DRIVE ROLLS								
160003	Drive roll V-groove	0,6-0,8	o	X	o	X	X	o
160004	Drive roll U-groove	0,8-1,0	-	-	-	-	-	X
160005	Drive roll V-groove knurled	1,0-1,2	X	o	X	o	-	-
WIRE FEED LINERS								
590075	Non iron liner *	0,6-1,2	X	X	X	X	X	X
613746	Steel liner**	0,6-1,2	X	X	-	-	-	-
CONTACT TIPS								
711986	10 tips 0.6mm	0,6	X	X	X	X	X	**
711994	10 tips 0.8mm	0,8	X	X	X	X	X	**
712000	10 tips 1.0mm	0,9-1,0	X	X	X	X	X	**
712018	10 tips 1,0-1.2mm (max 1mm al)	1,2	X	X	X	X	X	X
GAS NOZZLES								
160001	GAS NOZZLE	0,6-1,2	All wires requiring gas shielding					

- X = Well suited
 O = May be used, but not the best solution
 - = Not recommended, do not use
 * = Non iron liner can be used for all welding wires, but wears down quicker than steel liners
 ** = Steel liner is a more wear resistant alternative for black steel welding but should be avoided for stainless and non iron wires to avoid contamination of the weld.

10 WIRE WELDING ACCESSORIES

The Anti spatter spray prevents the spatter from the welding arc from sticking to the metal surface adjacent to the weld. By spraying on a thin layer on each side of where the welding is to take place, a barrier is formed preventing the molten globules from burning on to the surface.

The spatter can easily be wiped off with a brush after welding. Time consuming chipping and grinding is prevented. The spray is packed in an outer carton containing 6 X 400 ml cans.

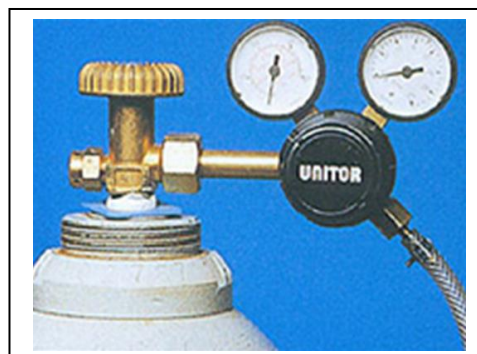
The multipurpose pliers provides means for spatter removal from the nozzle inside, tip and outside. It has jaws for contact tip and nozzle removal and installation, and for cutting and pulling wire.



Multipurpose pliers for torch pcs 193-591990
 Anti Spatter Spray, 6 pcs of 400 ml in a box set 193-633149

11 SHIELDING GAS ACCESSORIES

Regulator with flow adjustment 0-32 l/min for Argon and Mixed gas	pcs	197 510010
Regulator with flow adjustment 0-32 l/min for CO2 shielding gas	pcs	193 510012
Gas hose 1/4" black, for shielding gas	m	176 576157
Hose clamps, one ear for 1/4" hose, non-protruding stainless, bag of 10 pcs	set	401 729442
Pinching tool for ear clamps	pcs	401 768507
Hose joint for 1/4" hose, 3/8" RH threads	pcs	176 175596
Flowcontrol meter for use at torch nozzle	pcs	197 597328
Flowcontrol needle valve for gas inlet	pcs	197 597310



Argon / CO2 mix gas is used for steel and stainless steel

Pure Argon is used for all non iron metals.
Both gases are available in 10 and 50litre cylinders.

Pure CO2 may also be used as shielding gas, but only for black steel with maximum thickness 2mm.
A special regulator for the CO2 cylinder is then required



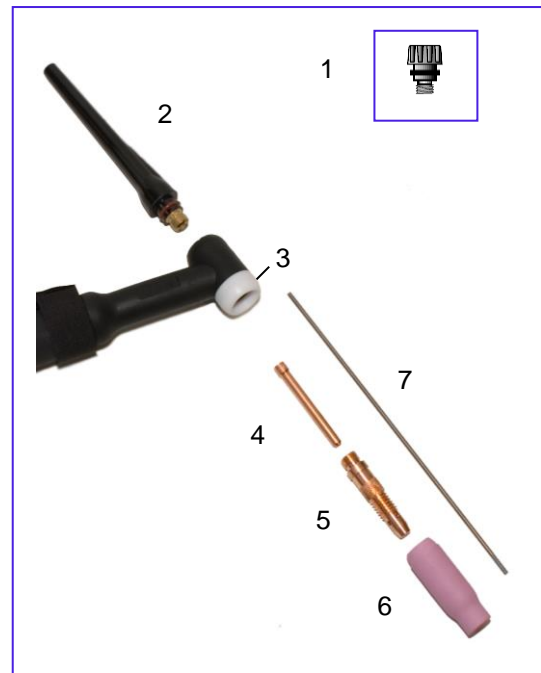
12 TIG ACCESSORIES

TIG-Torch T-161 with 4m cable, euro-connector and torch mounted trigger	pcs	197 160010
TIG accessories kit including short back cap, spare heat-shield, collets, collet bodies, nozzles and electrodes	pcs	197 607810
Hose joint for 1/4" hose, 3/8" RH threads	pcs	176 175596
Flowcontrol meter for use at torch nozzle	pcs	197 597328
Flowcontrol needle valve for gas inlet	pcs	197 597310



Spares

- 1 197-551192 pcs Short back-cap
- 2 197-551200 pcs Long back-cap
- 3 197-613767 pcs Heat shield
- 4 197-551168 pcs Collet 1.6mm
- 4 197-551150 pcs Collet 2.4mm
- 5 197-551184 pcs Collet body 1.6 mm
- 5 197-551176 pcs Collet body 2.4 mm
- 6 197-551135 pcs Alumina nozzle 6
- 6 197-551127 pcs Alumina nozzle 7
- 7 197-674710 pck Tungsten electrode (10 pcs) 1.6 mm
- 7 197-674736 pck Tungsten electrode (10 pcs) 2.4 mm



13 MAINTENANCE

POWER SOURCE COMPARTMENT

In extremely dusty locations, dirt may clog the air passages causing the welder to run hot. Blow dirt out of the welder with low pressure dry, oil-free air at regular intervals to eliminate excessive dirt and dust build-up on interval parts.

WIRE FEED COMPARTMENT

1. When necessary, vacuum accumulated dirt from gearbox and wire feed section.
2. Occasionally inspect the incoming guide tube and clean inside diameter if necessary.
3. Motor and gearbox have lifetime lubrication and require no maintenance.

FAN MOTOR AND WIRE REEL SPINDLE

Requires no maintenance. Do not lubricate shaft.

TORCH

1. Check wire feed liner for damage or wear at regular intervals. This is especially important for the non iron liner which may wear quickly if used for extensive shelf-shield welding
2. Replace worn contact tips as required. A variable arc is a typical symptom of a worn contact tip.
3. Remove spatter from inside of gas nozzle and from tip after each 10 minutes of arc time or as required.

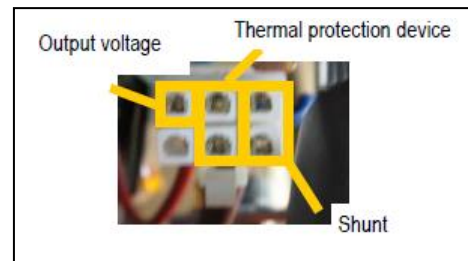
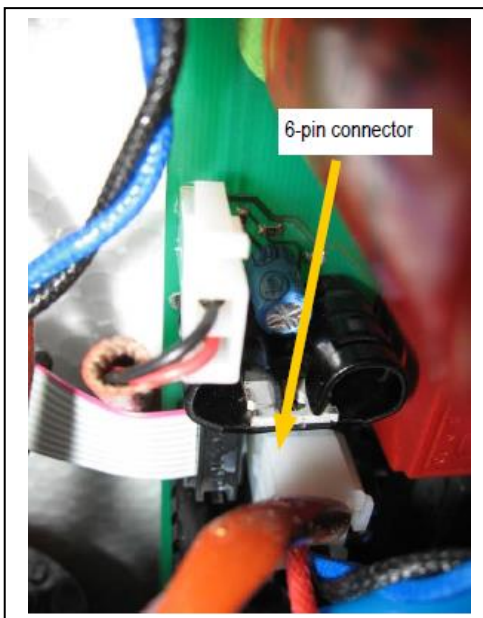
14 TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
The machine does not start.	<ul style="list-style-type: none"> - No current to the machine. - Voltage reaches the machine switch but there is no voltage after the contacts. - There is voltage after the switch but the machine does not start 	<ul style="list-style-type: none"> • Make sure that power is available at the socket you plug in to and that the power supply cable is intact. • Unplug the machine and make sure that when the machine is switched on, there is contact between the contact input and output and that the varistor is not broken. If so the power board must be replaced (pic.5). • Check the mosfet of the switching power supply unit on the power board (picture 6).
The line fuses blow when the switch is activated and the machine does start.	<ul style="list-style-type: none"> - Damaged primary cable or plug - Damaged inverter 	<p>Make sure that power is available at the socket you plug in to and that the power supply cable is intact.</p> <ul style="list-style-type: none"> • Check: <ul style="list-style-type: none"> - varistors (picture 5); - inverter (picture 4); - Input bridge rectifier (picture 3); - switching power supply unit (picture 6). <p>If one of these components is damaged replace the power board 050.0011.0001.</p>
The front panel is not activated.	<ul style="list-style-type: none"> - The fan works but the front panel does not activate - Both the fan and the front panel do not work. 	<p>Unplug the machine. Make sure the flat cable that connects the front panel to the power board is inserted correctly. If correctly inserted, replace the front panel. If the front panel does not activate, one of the switching power supply unit outputs is broken. The power board must be replaced.</p> <ul style="list-style-type: none"> • Check the mosfet of the switching power supply unit on the power board. If it's damaged it must be replaced (picture 6).
The MMA/MIG/TIG output voltage is about 11V but the machine does not weld.	<ul style="list-style-type: none"> - The output voltage wiring of the front panel is interrupted (picture 1). - The primary current alarm on the power board is activated 	<ul style="list-style-type: none"> • Unplug the machine - Make sure that the wiring contact is correctly inserted in the connector. - Check for continuity between the +/- output outlets and that the 2-path connector is connected to the front panel (picture 1); • The power board must be replaced
The output voltage in each mode is about 11V and activating the thermal protection device.	<p>Let the machine cool down. If the machine continues running with the protection devices on, switch the machine off and unplug the machine. Remove the hood and make sure the temperature of the heat sink part is less than 40°C; If it is less than 40°C, check that the thermal protective device contacts are closed as it should be.</p>	<ul style="list-style-type: none"> - If one of the protection devices is permanently open it is defective and must be replaced. - If it is closed, make sure that the two terminals are well inserted in the connector (picture 1). - Power board feed problems, it must be replaced.
The machine is dead except for lit LED warning light on the back panel	<p>Input voltage exceeds 285V and the TP (total protection) function has been activated</p>	<p>Nominal input voltage should be 230V. Welding power will return automatically as soon as the input voltage has been corrected.</p>

PROBLEM	CAUSE	SOLUTION
No output voltage	Check for a short circuit at the DINSE plug with a diode tester. A short circuit may be caused by : – damaged transil on the snubber board; – damaged diodes; – damaged inverter; – The inductive value of the Power Transformer is null.	Unplug the machine. Remove the snubber board: • check with a diode tester the status of the transil on the snubber board (picture 2); • check with a diode tester the status of the diodes; • check the status of the power board (picture 4); • The Power Transformer must be replaced.
Primary fuses blow	Settings have been set to demand higher power than available	Decrease the welding current / wire speed / voltage settings
The welding is not optimal.	– Spattering during welding. – Porosity in the deposit. – Too narrow welding seam (“dry arc”). – Too wide welding seam (“too hot weldpool”)	• Make sure welding polarity is correct. • Decrease the voltage and check the gas emission from the torch. • Increase the wire speed and/or voltage. • Decrease the wire speed and/or voltage.
The machine stops welding and emits an acoustic signal (sound alarm).	The maximum current that can be supplied by the machine has been exceeded	Decrease the value of the welding parameters.
Non optimal wire welding start.	Spattering and crackeling occurs on starting.	Decrease the wire speed setting or increase voltage setting
No gas from the solenoid valve	– Excessive gas pressure. – Damaged solenoid valve wiring. – The solenoid valve control relay on the front panel is damaged. – Solenoid valve is damaged	• Reduce gas flow setting. • Unplug the machine, If break in a circuit, single out the break and repair it. Make sure that the wiring contacts are correctly inserted in the connectors. • The logic front panel (pos 11) must be replaced. • Should the operations carried out not have a positive outcome, replace the solenoid valve (pos 35).. Should the operations carried out not have a positive outcome, try to replace the Toroidal Transformer (pos 21).
The torch button does not work	– The amphenol board (0042) cable is broken. – The cable between the euro connector and the connector on front panel is broken – The logic front panel (pos 11) is damaged.	• The amphenol cable must be replaced. • Check the connection between the Euro-connector and pin 1/2 of the Amphenol connector. – Then check the connection between the amphenol connector and the motor board and between motor board and front panel. • The front panel must be replaced
The machine always welds at maximum current.	– The front panel is damaged.. – The power board is damaged. – The shunt wires are damaged or not correctly inserted	Unplug the machine: • The front panel must be replaced. • The power board must be replaced. • Connect the cables, or if damaged, replace them.

PROBLEM	CAUSE	SOLUTION
The wire feeding unit motor does not work.	<ul style="list-style-type: none"> – Primary fuse of the auxiliary transformer is damaged – Control signals from the front panel do not reach the motor board. – The motor board is damaged. 	<p>Unplug the machine. The delayed fuse 5x20 800 mA on the back of the machine must be replaced.</p> <ul style="list-style-type: none"> • Check the connection of the motor feeding wire on the front panel and after that check the continuity between the front panel and the amphenol connector (picture 9). Check connections between the front panel and the white 4-pin connector; if connections are not interrupted, replace the front panel. • The motor board must be replaced.

PICTURE 1

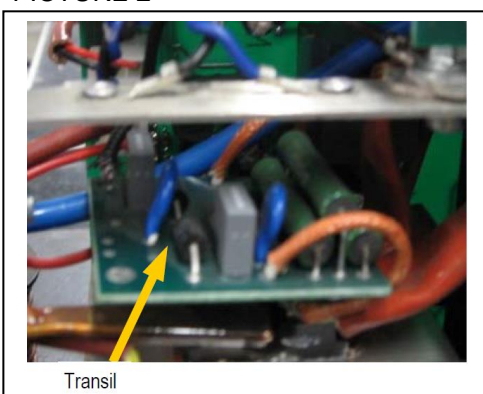


- Position of the connector in which they are inserted:
- thermal protection device : position 2, 5 (yellow wires)
 - Wire for the output voltage reading: position 3 (red)
 - Shunt wire: pin 1/ 4.

Check the conductivity of contact of the thermal protection device with the diode tester, with the heat sink part temperature less than 40° C.

Check the conductivity between: + socket and the shunt; - socket and the output voltage wire

PICTURE 2

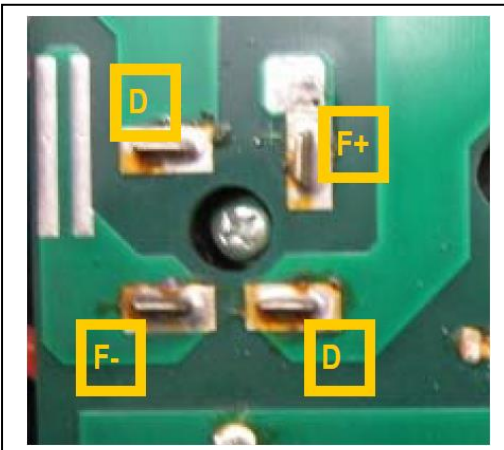


Remove the snubber board and check that the transils are not in short circuit.

At the ends of the two transils (see below) positioned on the snubber board, "OL" must always be measured.



PICTURE 3



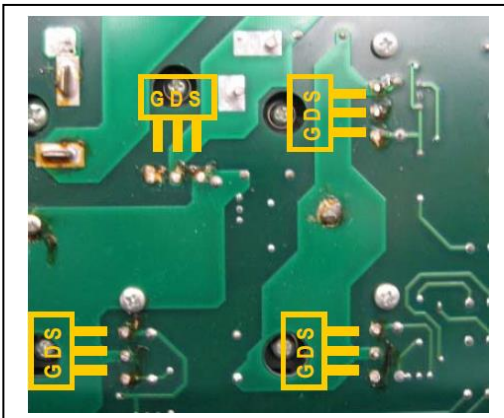
Input bridge rectifier on power board.

To check the Input bridge rectifier , carry out the following measurements with a diode tester:

Faston	Probe	Faston	Probe	Misura
F+	Red	D	Black	"OL"
F-	Red	D	Black	>.450
F+	Black	D	Red	"OL"
F-	Black	D	Red	>.450

Should there be a short circuit on one of these measurements, the input bridge rectifier must be replaced.

PICTURE 4

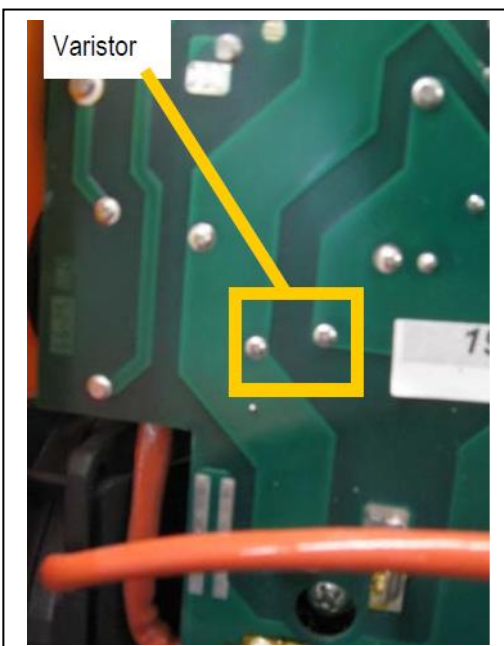


To check the inverter, carry out the following measurements with a diode tester:

Red Probe	Black Probe	Measure
S	G	0.28
G	S	0.6

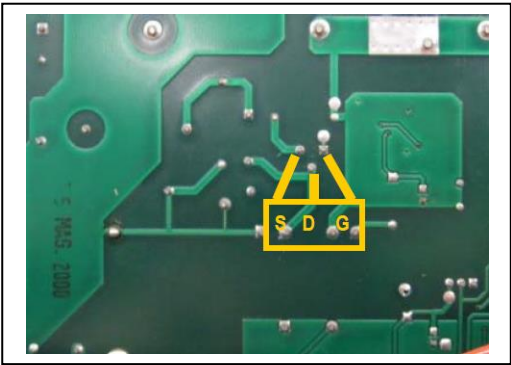
Should there be a short-circuit on one of these measurements or an "OL" instead of a numeric value, the power board must be replaced.

PICTURE 5



The varistor is a blue disc near the ground wire of the power board. This device is necessary to protect the board from input overvoltage. When there is overvoltage it "explodes" , normally causing a short circuit. If the extent of the short circuit is very high its becomes an open circuit.

PICTURE 6



To check the mosfet of the switching power supply unit, carry out the following measurements:

Red Probe	Black Probe	Measure
G	D	0.5
D	S	"OL"
G	S	0.6

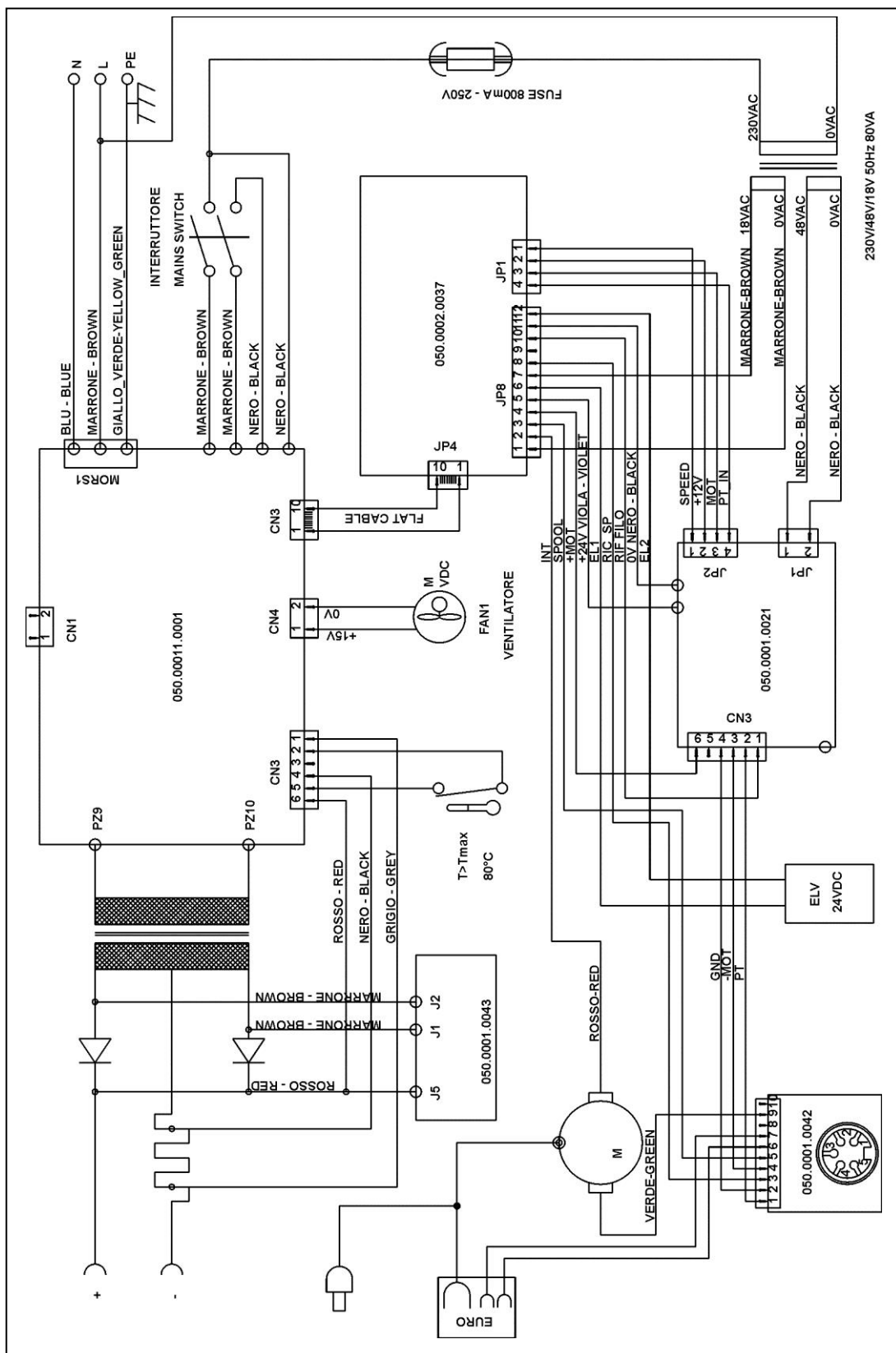
Should there be a short-circuit on one of these measurements or an "OL" instead of a numeric value, the power board must be replaced.

PICTURE 7

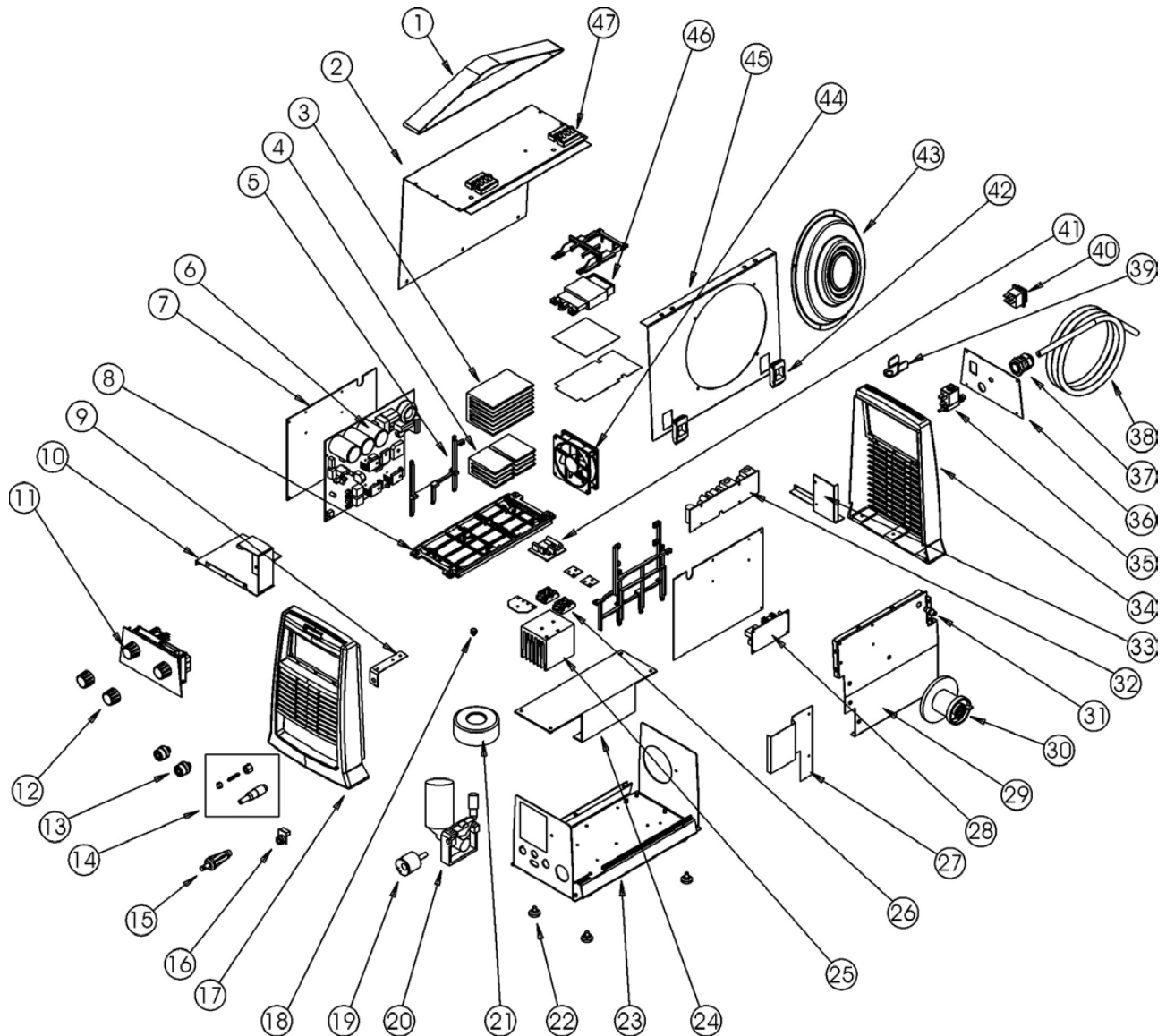


Digital multimeter. OL: Open Loop

15 WIRING DIAGRAM



16 COMPONENTS AND SPARES



For ordering spares please state:

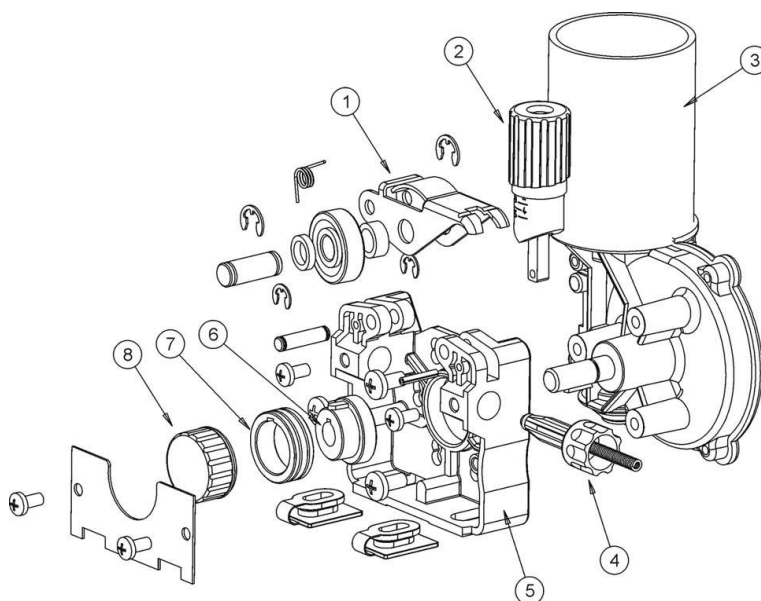
Model: UWW-161 TP
Serial no:
Pos no:
Code:

POS	CODE	DESCRIPTION
1	005.0001.0008	BELT
2	011.0001.0188	UPPER COVER
3	015.0001.0001	HEAT SINK L=107mm
4	015.0001.0002	HEAT SINK L=50mm
5	012.0001.0000	INTERNAL FRAMEWORKS
6	050.0011.0001	POWER BOARD
7	046.0002.0006	ELECTRICAL INSULATION
8	012.0001.0007	INTERNAL PLASTIC SUPPORT
9	045.0005.0006	SHUNT
10	011.0010.0005	LOGIC PROTECTION PLATE
11	050.5052.2400	LOGIC FRONT PANEL
12	014.0002.0008	KNOB
13	021.0001.0229	FIXED SOCKET 200A
14	021.0000.0003	KIT FOR GAS CONNECTORS
15	021.0001.0029	MOVABLE PLUG
16	050.0001.0042	TORCH CONNECTOR BOARD
17	010.0006.0033	FRONT PLASTIC PANEL
18	040.0003.1080	TERMAL SWITCH
19	021.0001.2001	COUPLING EURO
20	002.0000.0005	WIRE FEED MOTOR
21	041.0006.0001	TOROIDAL TRANSFORMER
22	016.0009.0001	RUBBER FOOT
23	011.0010.0007	LOWER COVER
24	011.0010.0008	INTERNAL SUPPORT PLATE
25	015.0001.0004	HEAT SINK L=75mm
26	032.0002.0255	DIODE
27	011.0010.0004	MOTOR PROTECTION PLATE
28	050.0001.0021	MOTOR BOARD

POS	CODE	DESCRIPTION
29	011.0010.0003	COIL BEARIN PLATE
30	011.0006.0050	SPOOL SUPPORT
31	040.0006.1420	FUSE CARRIER
32	050.0001.0043	DOUBLER OVERCUT BOARD
33	011.0010.0006	SWITCH PROTECTION PLATE
34	010.0006.0034	REAR PLASTIC PANEL
35	017.0001.5541	SOLENOID VALVE
36	013.0007.0200	REAR PANEL
37	045.0000.0007	CABLE CLAMP
38	045.0002.0001	SUPLY CABLE
39	011.0002.0018	SOLENOID VALVE PLATE
40	040.0001.0001	TWO-POLE SWITCH
41	050.0001.0003	SNUBBER BOARD
42	011.0006.0001	SLIDE CLOSURE
43	012.0000.0001	SPOOL COVER
44	003.0002.0002	FAN
45	011.0000.0208	DOOR PLATE
46	010.0007.0001	PLANAR TRANSFORMER
47	011.0006.0006	PLASTIC HINGE

WIRE FEED MECHANISM

POS	CODE	DESCRIPTION
1	002.0000.0230	PRESSURE ARM COMPLETE
2	002.0000.0224	FIXING ARM COMPLETE
3	002.0000.0231	MOTOR COIL
4	002.0000.0217	INLET GUIDE COMPLETE
5	002.0000.0229	FEED PLATE
6	002.0000.0232	DISTANCE RING
7	002.0000.0106	FEED ROLL
8	002.0000.0227	FIXING CAP



17 SAFETY INSTRUCTIONS

Arc Welding Hazards

The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

Only qualified persons should install, operate, maintain, and repair this unit. During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

Do not touch live electrical parts. Wear dry, hole-free insulating gloves and body protection. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground. Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling. Use AC output ONLY if required for the welding process. If AC output is required, use remote output control if present on unit.

Disconnect input power before installing or servicing this equipment. Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in the cord plug and that the plug is connected to a properly grounded receptacle outlet. When making input connections, attach proper grounding conductor first – double-check connections. Frequently inspect input power cord for damage or bare wiring –replace cord immediately if damaged – bare wiring can kill. Turn off all equipment when not in use.

Do not use worn, damaged, undersized, or poorly spliced cables. Do not drape cables over your body. If earth grounding of the work-piece is required, ground it directly with a separate cable. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine. Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual. Wear a safety harness if working above floor level. Keep all panels and covers securely in place. Clamp work cable with good metal-to-metal contact to work-piece or worktable as near the weld as practical. Insulate work clamp when not connected to work-piece to prevent contact with any metal object. Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters. Turn off inverter, disconnect input power, and discharge input capacitors before touching any parts.

FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health. Keep your head out of the fumes. Do not breathe the fumes. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases. If ventilation is poor, use an approved air-supplied respirator. Read the Material Safety Data Sheets (MSDS) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.

Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.

Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.

Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching. Wear approved safety glasses with side shields under your helmet. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc. Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding. Protect yourself and others from flying sparks and hot metal. Do not weld where flying sparks can strike flammable material. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Watch for fire, and keep a fire extinguisher nearby. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side. Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared. Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards. Do not use welder to thaw frozen pipes. Remove stick electrode from holder or cut off welding wire at contact tip when not in use. Wear oil-free protective garments such as leather gloves, heavy shirt, cuff-less trousers, high shoes, and a cap. Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.

FLYING METAL can injure eyes.

Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag. Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

Shut off shielding gas supply when not in use. Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.

Do not touch hot parts bare handed. Allow cooling period before working on gun or torch.

MAGNETIC FIELDS can affect pacemakers.

Pacemaker wearers keep away. Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing. Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully. Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs. Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping. Keep cylinders away from any welding or other electrical circuits. Never drape a welding torch over a gas cylinder. Never allow a welding electrode to touch any cylinder. Never weld on a pressurized cylinder – explosion will result. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition. Turn face away from valve outlet when opening cylinder valve. Keep protective cap in place over valve except when cylinder is in use or connected for use. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

Additional precautions for installation, operation, and maintenance

Do not install or place unit on, over, or near combustible surfaces. Do not install unit near flammables. Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.

FALLING UNIT can cause injury.

Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories. Use equipment of adequate capacity to lift and support unit. If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

OVERUSE can cause OVERHEATING

Allow cooling period; follow rated duty cycle. Reduce current or reduce duty cycle before starting to weld again. Do not block or filter airflow to unit.

STATIC (ESD) can damage PC boards.

Put on grounded wrist strap BEFORE handling boards or parts. Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

Keep away from moving parts. Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

Do not press gun trigger until instructed to do so. Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

MOVING PARTS can cause injury.

Keep away from moving parts such as fans. Keep all doors, panels, covers, and guards closed and securely in place.

H.F. RADIATION can cause interference.

High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment. Have only qualified persons familiar with electronic equipment perform this installation.

The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.

If notified about interference, stop using the equipment at once. Have the installation regularly checked and maintained. Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

ARC WELDING can cause interference.

Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.

Be sure all equipment in the welding area is electromagnetically compatible.

To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.

Locate welding operation 100 meters from any sensitive electronic equipment.

Be sure this welding machine is installed and grounded according to this manual.

If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

Principal Safety Standards (US)

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126 (phone: 305-443-9353, website: www.aws.org) . Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126 (phone: 305-443-9353, website: www.aws.org) . National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org and www.sparky.org) . Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (phone: 703-412-0900, website: www.cganet.com) . Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800-463-6727 or in Toronto 416-747-4044, website: www.csa-international.org) . Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (phone: 212-642-4900, website: www.ansi.org) . Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org and www.sparky.org) . OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR) , Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices---phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov)

EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields Welding current, as it flows through welding cables, will cause electromagnetic fields.

There has been and still is some concern about such fields.

However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard."

However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to work-piece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.

18 NOTES

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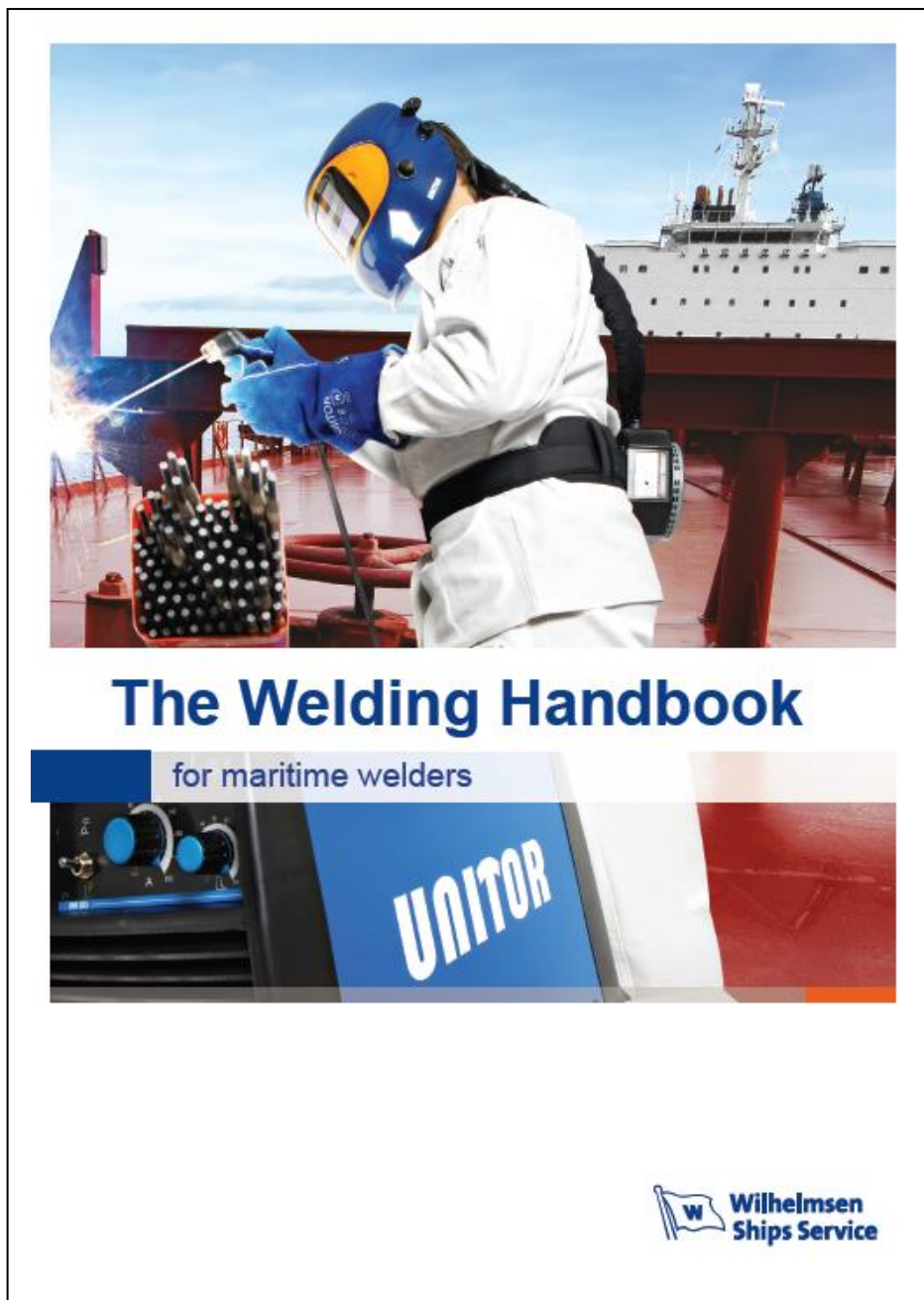
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USE THE UNITOR WELDING HANDBOOK FOR MARITIME WELDERS



You can download it here

<http://www.wilhelmsen.com/services/maritime/companies/buss/DocLit/ProductLiterature/Pages/Maintenanceandrepair.aspx>

...or contact Wilhelmsen Ships Service for a paper copy

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Alexandria, Va Algiers Point Amelia Anacortes, Wa Anchorage,ak Annapolis,md Antioch Aransas Pass Tx Astoria, Or Baltimore Baton Rouge Bayonne Baytown Beaumont Bellingham, Ma Bellingham, Wa Benicia, Ca Boston, Ma Bridgeport Bridgeport, Conn Brooklyn, Ny Brownsville Tx Brunswick Brunswick, Ga ucksport,me Buras Camden Camden, Nj Cameron La Chalmette Charleston, Sc Cheasapeake Chester Chicago Claymont Convent Coos Bay, Or Corpus Chr.tx Crockett Darrow Davant Deer Park Delaware City Destrehan Donaldsonville Dutch Harbor, Ak Eastport, Me Eureka Everett, Wa Fairless Hills Famaquita Farndale wa Freeport Tx Galveston Tx Garville Geismar Georgetown, Sc Gloucester, Nj Good Hope Gramercy Grand Isl aii Hoquiam, Wa Houma Jacksonville a Loop Terminal Los Angeles ad City, Nc Morgan City Morrisville, Pa Myrtle Grove Naples Nederland Tx New Haven, Conn New Iberia New London New Orleans New York Newington, Nh Newport News, Va Newport, Or Newport, Ri Nikiski Norco Norfolk Oakland Olympia, Wa Orange, 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